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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

09/396,470

09/15/1999

EUEE-SEON JANG

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08/16/2002

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POST OFFICE BOX 1404
ALEXANDRIA, VA 22313-1404

EXAMINER

SENF, BEHROOZ M

ART UNIT

PAPER NUMBER

2613

DATE MAILED: 08/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/396,470

Applicant(s)

JANG ET AL.

Examiner

Behrooz Senfi

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 3, are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US 6,262,737) in view of Migdal et al. (US 6,064,771).

Regarding claim 1, Li '737 discloses progressive 3-D mesh information coding and dividing 3-D mesh into a plurality of mesh, and coding separately (i.e. abstract), and multiplexing the plurality of coded mesh (i.e. col.14, lines 35+), and transmitting (i.e. col. 2, lines 49+).

Li '737 fails to explicitly teach each of the mesh components corresponds to a different partition of the 3-D mesh.

However, the above claimed limitation is well-known in the art as evidenced by Migdal '771, in particular (i.e. figs. 4g – 4j, col. 14, lines 35+) teaches plurality of mesh and also mesh components corresponds to different partition of 3-D mesh.

In view of the above, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Li '737, as taught by Migdal '771 for the benefit of partially updating and correcting.

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Regarding claim 2, combination of Li '737 and Migdal '771 teaches connectivity and geometry information for reconstruction (i.e. abstract of Li '737) and photometry information would be obvious feature for the process.

Regarding claim 3, combination of Li '737 and Migdal '771 teaches extracting one or more mesh object (i.e. fig. 1, parts a, and b of Li '737), and dividing one or more mesh object layers each into a plurality of mesh (i.e. abstract of Li '737).

3. Claims 4 – 7, 10 – 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (US 6,262,737) in view of Tao et al. (US 5,818,463).

Regarding claim 4, Li '737 teaches progressive 3-D mesh information coding, and dividing 3-D mesh into a plurality of mesh, and coding separately (i.e. abstract).

Li '737 fails to teach reusing the information generated by the coded mesh for coding mesh component, which has not been coded yet.

However, such a limitation is well-known in the art as evidenced by Tao '463, in particular fig. 2, clearly teaches while a mesh component is coded the information generated will feed back to wire-frame synthesizer which will be used for the next coding mesh component (i.e. fig. 2, units 212, 214, 216).

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In view of this, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Li '737 as taught by Tao '463, since reusing the information will speed up the processing.

Regarding claims 5 and 15, Li '737 fails to explicitly teach dividing a transmitted bit stream into a plurality of coded mesh, also decoding each and reconstructing a 3-D mesh by synthesizing.

However, such a limitation is well-known in the art as evidenced by Tao '463, in particular fig. 2, clearly teaches plurality of bit streams being coded (i.e. units 202, 206 and 216) and decoded (i.e. unit 208) and reconstructing a 3-D mesh through multiplexer 218.

Regarding claim 6, Tao '463 teaches identifying characteristic features of the object, and shape and position of mesh (i.e. col. 3, lines 29+), which is equivalent to classifying mesh.

Regarding claims 7 and 16, the limitation claimed is substantially similar to claim 4, therefore the ground for rejecting claim 4, also apply here.

Regarding claim 10, the limitations claimed are substantially similar to claims 1, 3 and 4 - 5, therefore the ground for rejecting claims 1, 3 and 4 - 5, also apply here.

Regarding claim 11, the limitation claimed is substantially similar to claims 2 and 9, therefore the ground for rejecting claims 2 and 9, also apply here.

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Regarding claims 12 – 13 and 17, the combination of Li '737 and Tao '463 teaches a progressive 3-D mesh information coding and plurality of component coding (i.e. abstract of Li '737), and multiplexing (i.e. col.14, lines 35+ of Li '737), for the additional limitation a 3-D data analyzer for receiving a 3-D mesh and reconstructing the input 3-D mesh into plurality of mesh (see col. 2, lines 58+ of Tao '463).

Regarding claim 14, the limitation claimed is substantially similar to claim 4, therefore the ground for rejecting claim 4, also apply here.

Regarding claims 18 and 20, the limitation claimed is substantially similar to claims 5 and 9, therefore the ground for rejecting claims 5 and 9, also apply here.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 9 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Li '737.

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Regarding claim 9, Li '737 discloses progressive 3-D mesh information coding/decoding method (i.e. abstract), extracting one or more independent mesh object layers from 3-D mesh (i.e. fig. 1, a and b + abstract), independently coding and transmitting the one or more mesh object layers ((i.e. abstract, col. 2, lines 49+), obtaining one or more independent mesh object (i.e. fig. 1) and decoding (i.e. abstract), reconstructing original 3-D mesh by collecting the independent mesh object layers and removing redundant information (i.e. abstract, col. 5, lines 57+).

Regarding claim 19, Li '737 discloses progressive 3-D mesh information coding and decoding, and dividing 3-D mesh into a plurality of mesh, and coding separately (i.e. abstract), and multiplexing the plurality of coded mesh (i.e. col.14, lines 35+), and transmitting (i.e. col. 2, lines 49+).

Response to remarks:

Applicant asserts (paper no. 8, page 6, second paragraph) that:

Li '737 does not disclose removing redundant information in a step involving reconstruction of a 3-D mesh.

Examiner disagrees. The main invention of Li '737 is reconstruction of a 3-D mesh (i.e. abstract), and on col. 5, lines 57+ clearly said redundancy removal while a 3-D graphic model is defined.

Also on page 5 Applicant asserts that Li '737 does not disclose dividing input 3-D mesh into one or more mesh object and again dividing each mesh object layer into a plurality of mesh component.

Examiner disagrees. Li '737 clearly said (i.e. abstract) that both the base mesh and the **refinement** operations are entropy coded so that a series of mesh models of **continuously** varying resolution can be constructed. In other words the refinement process is an continuous process until achieving the desired result.

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Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Behrooz Senfi** whose telephone number is **(703)305-0132**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Chris Kelley** can be reached on **(703)305-4856**.

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Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

Or faxed to:

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121


Crystal

Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relative to the status of the application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

B. S. B. S.

07/29/2002


CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
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